

An object moves along a line so that its position at time t is given by $s(t) = t^3 - 9t^2 + 24t + 3$ where $t \geq 0$.

- a. What is the object's position at time $t = 3$?
- b. What is the object's velocity at time $t = 3$?
- c. What is the object's acceleration at time $t = 3$?
- d. Is the object speeding up or slowing down at $t = 3$? Justify your response.
- e. When is the object at rest?
- f. When is the object moving right?
- g. How far does the object travel in the first 4 seconds?